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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/647,207	01/08/2001	Michael Stuke	HUBR1165 100	5279

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EXAMINER

ROSSI, JESSICA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 01/15/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/647,207

Examin r

Jessica L. Rossi

Applicant(s)

STUKE ET AL.

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1733

#13

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2002 .
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) 41-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_ .
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_ .
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ . 6) ☐ Other: \_\_\_\_\_ .

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## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is in response to the amendment dated 11/4/02. Claims 23-44 are pending. Claims 41-44 are withdrawn from further consideration.
2. The rejection of claims 23-40 under 35 U.S.C. 103(a) as being unpatentable over Sloane et al. (of record), as set forth in the previous office action dated 7/2/02, has been withdrawn due to the added limitations in claim 23.

### ***Election/Restrictions***

3. Applicant's election with traverse of Group I, claims 23-40, in Paper No. 9 is acknowledged. The traversal is on the ground(s) that the product claims (41-44) are made using the process of claim 23, and practicing the process of claim 23 results in the product of claim 41. This is not found persuasive because PCT Rule 13.2 only requires that lack of unity be established by showing that the different Groups do not share a special technical feature, or by showing that the special technical feature does not define a contribution over the prior art. In the present invention, Applicants special technical feature is bonding polymeric components in an adhesive-free manner by applying pressure, heating to the glass transition temperature of the substrate, and holding at the glass transition temperature for a period of time. This special technical feature does not define a contribution over the prior art, since all these limitations are disclosed in the reference to Soane (of record; detailed below in paragraph 7).

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 25, 31, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 25, A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 25 recites the broad recitation "acrylic polymers", and the claim also recites "in particular polymethyl methacrylate", which is the narrower statement of the range/limitation.

Regarding claim 31, it is unclear as to how this claim further limits claim 23. Applicants are asked to clarify.

Regarding claim 35, it is unclear as to how this claim further limits claim 23. Applicants are asked to clarify. It is suggested to cancel this claim.

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***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 23-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soane et al. (US 6176962; of record) in view of McReynolds (US 6425972).

With respect to claim 23, Soane, directed to adhesive-free production (column 5, lines 21-23) of microfluidic devices, teaches preparing a polymeric substrate 12, which has depressions forming microchannels 21, 23, and applying a polymeric cover 14 to the substrate by uniform pressure (Figures 5-6; column 2, lines 39-46 and 58-65). The reference teaches heating the substrate and cover, while still applying pressure to the cover, to 2-5°C above the glass transition temperature of the substrate and cover and holding them at such a temperature (column 2, line 63 – column 3, line 4). The assembly is then cooled (column 3, lines 6-8). The reference is silent as to claimed pressure range and 15 minute holding period.

It is known in the art to produce microfluidic devices using an adhesive-free bonding process, where a polymeric substrate, having microchannels, is bonded to a polymeric cover by the application of heat and pressure, as taught by McReynolds (column 3, lines 15-19 and 40-43; column 4, lines 24-26 and 33-36). McReynolds acknowledges that the applied temperature and pressure will depend on the nature of the polymeric material (column 4, lines 33-36); it being noted that McReynolds (column 3, lines 41-43) discloses polymers identical to those of the present invention and Soane (see various examples in reference).

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Therefore, selection of a particular pressure range for the process of Soane would have been within purview of the skilled artisan at the time the invention was made depending on the polymeric material used because such is known in the art, as taught by McReynolds, and the skilled artisan would have been inclined to select a pressure range that produced a strong bond without deforming the substrate and/or cover.

As for a specific holding period, it is noted that Soane specifically points out that the temperature is held “for a **time period sufficient** to allow the polymer molecules to interpenetrate the polymeric surfaces of the substrate and cover and create a morphological bonding” (column 3, lines 1-4). The skilled artisan reading the reference as a whole would have readily appreciated that selection of such a time period would have been determined by the polymeric materials used, such that the polymer molecules have sufficient time to interpenetrate the surfaces of the substrate and cover in order to create a satisfactory bond; it being noted that Soane (column 9, line 67 – column 10, line 1) teaches polymeric materials identical to those of the claimed invention.

Regarding claims 24-25 and 29, Soane teaches using polymethyl methacrylate for the substrate and cover (column 9, line 67 – column 10, line 1).

Regarding claims 26-28, Soane teaches the depressions being 50-750  $\mu\text{m}$  (column 1, lines 35-43).

Regarding claims 30, transparent polymeric materials are taken as conventional in the art. It would have been obvious to use transparent polymeric materials for the cover and/or substrate of Soane because such is known in the art and this allows for visibility through the same.

Regarding claim 32, Applicants are directed to the rejection of claim 23.

Regarding claim 33, Applicants are directed to the rejection of claim 23.

Regarding claims 34 and 37, Applicants are directed to the rejection of claim 23.

Regarding claim 36, Applicants are directed to the rejection of claim 23.

Regarding claims 38-40, selection of a particular cooling period would have been within purview of the skilled artisan at the time the invention was made depending on the materials used such that the time period is sufficient to allow for stable bond formation.

#### ***Response to Arguments***

8. Applicant's arguments filed 11/4/02 have been fully considered but they are not persuasive.

On page 4 of the arguments, Applicants argue that Soane does not teach or suggest Applicants recited pressure range and holding time period. Applicants are directed to paragraph 7 above.

#### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jessica L. Rossi** whose telephone number is **703-305-5419**. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W. Ball can be reached on 703-308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jessica L. Rossi  
Art Unit 1733



jl  
January 10, 2003

  
Michael W. Ball  
Supervisory Patent Examiner  
Technology Center 1700